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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/690,147	10/17/2000	Charles L Mohr	MOHR, CHARLES L.	2546

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EXAMINER

WEST, JEFFREY R

ART UNIT	PAPER NUMBER
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2857

DATE MAILED: 02/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/690,147

Applicant(s)

MOHR ET AL. *PS*

Examiner

Jeffrey R. West

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 November 2002.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,4 and 6-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7-16 is/are allowed.
- 6) ☒ Claim(s) 1,3,4 and 6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 November 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

1. The substitute specification filed 19 November 2002 conforms to 37 CFR 1.125(b) and has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over "HortPlus Quick Measure Penetrometer System" User Manual and Fact Sheet in view of U.S. Patent No. 6,142,010 to Merck, Jr. et al., U.S. Patent No. 6,332,364 to Buschmann et al., U.S. Patent No. 4,657,097 to Griffen, and U.S. Patent No. 4,884,696 to Peleg (Peleg '696).

HortPlus discloses a computerized intrusive plunger fruit tester and corresponding method of operation wherein fruit is placed on a centering plate underneath a cylindrical penetrating plunger that is repeatedly driven into the fruit (User Manual, page 4) to a correct depth at a constant velocity by a motor (Figure). HortPlus also discloses a load cell (i.e. stress block) for sensing the pressure resisting plunger motion into the fruit toward the centering plate and transmitting these measurements to a computer that converts the pressure data into fruit

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firmness and maturity information for display, using corresponding software (Fact Sheet, page 2). Further, it is considered inherent that in order for the software to translate the obtained pressure data into fruit firmness data, the software must compare the pressure data measurements with some type of similar fruit data profile so that when the pressure exceeds certain values, corresponding maturity levels can be determined.

HortPlus does not teach, however, the specific construction of the motorized plunger or load cell, an optoelectric sensor for sensing the position of the plunger, or the physical design of the fruit tester comprising a base between two up standing sides connected by a top. HortPlus also does not teach specifying that the fruit support be of an angular conic shape.

Merck, Jr. discloses a penetration hardness tester comprising a support platform, located on a base, on which an anvil is located with a material to be tested placed on the top surface of the anvil (column 2, lines 40-43), and an indenter plunger, connected to a load cell, located directly above the anvil that is vertically movable with respect to an upper platform (column 2, lines 43-46). Merck, Jr. teaches controlling a motor on the apparatus (column 2, lines 64-65), to move the indenter toward the material being tested, using a powering train that drives a belt and rotates a ball screw which translates the rotational motion into the vertical motion of the indenter platform (column 3, lines 9-12).

Merck, Jr. also discloses a control system including a sensing head, or optoelectric device (column 3, lines 63-65), attached to the frame of the apparatus

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for detecting the vertical displacement of the indenter (column 3, lines 13-18) and communicating the displacement data to a computer that controls the motor based on the measured information in order to keep a predetermined load applied to the specimen (column 3, lines 48-52) and control the rate of movement of the indenter (column 3, lines 53-56), as well as the depth of penetration of the indenter into the specimen (column 4, lines 3-16). Merck, Jr. also teaches that the computer receives the force/pressure measurements from the load cell to processes, control, and display test results (column 3, lines 18-24). Further, it is considered inherent that the computer contains the associated software that would be needed to perform the aforementioned functions.

Buschmann teaches a universal mechanical testing device comprising a frame having a base supporting laterally opposed up standing sides interconnected by a top, and a platform above the base between the upstanding sides located beneath a vertically oriented cylindrical plunger (Figure 1a) that can be adjusted to insure that the axis of the plunger aligns with the center of a centering plate (column 5, line 63 to column 6, line 8). Buschmann also teaches an actuator for controlling the movement of the plunger into a specimen, and a load cell for sensing the applied force and producing a force measurement signal (column 2, lines 30-35) wherein the force measurements are accurate to 5 mg (approximately .000011023 lbs.) and displacement measurements are accurate to 25 nm (approximately 9.8425×10^{-7} inches).

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Griffen teaches a load cell (i.e. stress block) comprising a general "S-shape" having upper and lower legs interconnected in opposed end portions by a body having upper and lower beam arms and two spacedly adjacent sensing elements carried by each of the upper and lower beam arms of the stress block body (column 3, lines 41-54 and Figure 3) in which all of the elements are interconnected in a full bridge configuration (column 6, lines 16-23 and Figure 8).

Peleg '696 teaches a method and apparatus for automatically inspecting and classifying different objects, specifically fruit, by holding the fruit in angular conical (column 24, lines 48-50) cups or trays wherein depending on the type of fruit to be inspected the cups may be suitably modified to for support and stability (column 11, line 47 to column 12, line 20).

It would have been obvious to one having ordinary skill in the art to modify the invention of HortPlus to include the specific construction of the motorized plunger, as taught by Merck, Jr. because, as suggested by Merck, Jr., the combination would have provided the automated motion, needed to carry out the invention of HortPlus, using a device and method that eliminates the need for a lot of movable parts to provide an accurate, easy to use penetrometer (column 1, line 62 to column 2, line 4, and column 2, lines 13-24). Further, it would have been obvious to one having ordinary skill in the art to modify the invention of HortPlus to include an optoelectric sensor for sensing the position of the plunger, as taught by Merck, Jr., because, as suggested by Merck, Jr., the combination would have increased the accuracy of the measured data by using a position sensing device that is unaffected by mechanical

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friction error (column 3, lines 39-46). Also, it would have been obvious to one having ordinary skill in the art to control the motor speed in accordance with the motor speed of previous successful fruit testing runs because it would have insured consistently accurate test results each time the invention is used.

It would have been obvious to one having ordinary skill in the art to modify the invention of HortPlus to include the physical design of the fruit tester, as taught by Buschmann, because, as suggested by Buschmann, the combination would have provided a particular design that insured high accuracy by allowing for fine vertical alignment between the penetrating plunger and the specimen (column 2, lines 53-61).

It would have been obvious to one having ordinary skill in the art to modify the invention of HortPlus to include the general "S-shaped" physical design of the load cell, as taught by Griffen, because Griffen suggests a load cell applicable to the invention of HortPlus that would have allowed for a corrective output response to off-center loading (column 2, lines 10-17).

It would have been obvious to one having ordinary skill in the art to modify the invention of HortPlus to include specifying that the fruit support be of an angular conic shape, as taught by Peleg '696, because the combination would have modified the fruit support of HortPlus to better grip the fruit under test and therefore held the fruit stable for more accurate operation.

4. Claims 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over

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HortPlus in view of Merck, Jr., Buschmann, Griffen, Peleg '696, and further in view of U.S. Patent No. 5,760,312 to MacKay et al., U.S. Patent No. 4,937,924 to Leuchtenmuller, and U.S. Patent No. 5,691,473 to Peleg (Peleg '473).

As noted above, HortPlus in combination with Merck, Jr., Buschmann, Griffen, and Peleg '696 teach many of features of the claimed invention including providing a defined chamber surrounding the specimen under test (Buschmann et al. column 6, lines 41-51) but do not teach a testing chamber defined above the base between the opposed sides with a rear shield and a movable front shield, and a cover to enclose the fruit tester above the testing chamber, a stripper plate, carried between the sides spacedly above the centering plate, wherein the stripper plate defines an orifice for passage of the plunger but prevents passage of the fruit, or a battery powering means.

MacKay teaches a penetration-type testing device wherein the object under test is placed in a cylindrical chamber having a front shield, back shield, and top cover (Figure 6). MacKay teaches that the object under test is placed within the central axis of the chamber, the shields are selectively moved to penetrate the object under test (column 1, lines 37-39), and the penetrating protrusions are pressed into the object with either a set force, and the displacement of the device is measured, or the protrusions are pressed into the device by a fixed displacement, and the force on the object is measured (column 1, lines 50-55). MacKay also teaches comparing the obtained measurements to reference data for determining the condition of the object (column 1, lines 43-45).

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Leuchtenmuller teaches a needling apparatus that comprises a motor driving the vertical motion of a needle through a piece of felt and a stripper plate disposed between the needle and a support platform which has an orifice for passage of the needle but not the felt (column 2, lines 59-66).

Peleg '473 teaches a method and equipment for measuring firmness of fruits and vegetables comprising two gripper bodies that hold a fruit at a predetermined pressure of force while a vibration actuator excites the fruit (column 2, lines 55-63), for measurement by a transducer (column 2, lines 64-67), to determine a firmness index (column 3, lines 7-11). Peleg '473 also teaches that the device be light weight and contain a rechargeable battery power source (column 9, lines 9-14) and that the fruit under test be positioned in a supporting conic cup (column 9, lines 38-43 and Figure 9).

It would have been obvious to one having ordinary skill in the art to modify the invention of HortPlus, Merck, Jr., Buschmann, Griffen, and Peleg '696 to include a testing chamber defined above the base between the opposed sides with a rear shield and a movable front shield, and a cover to enclose the fruit tester above the testing chamber, as taught by MacKay, because the combination would have provided a method for restricting the movement of the fruit during testing. Further, since the applicant describes the purpose of the chamber as a means for keeping debris from entering the testing area (page 19, lines 3-16), which is taught by both the inventions of Buschmann and MacKay, and the claimed invention could be successfully implemented without the required specifics of the chamber, the

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remaining specifics of the testing chamber are considered to be an engineering design choice.

It would have been obvious to one having ordinary skill in the art to modify the invention of HortPlus, Merck, Jr., Buschmann, Griffen and Peleg '696 to include a stripper plate, carried between the sides spacedly above the centering plate, wherein the stripper plate defines an orifice for passage of the plunger but prevents passage of the fruit, as taught by Leuchtenmuller, because, as suggested by Leuchtenmuller, the combination would have provided a method for performing repeated penetration of an object that, by holding the object being penetrated in place, would eliminate the need for stopping the process after each penetration to remove the penetrator (column 3, lines 6-8).

It would have been obvious to one having ordinary skill in the art to modify the invention of HortPlus, Merck, Jr., Buschmann, Griffen, and Peleg '696 to include a battery powering means, as taught by Peleg '473, because, as suggested by Peleg '473, the combination would have provided a device for measuring fruit firmness that is portable and can be used in the field or orchard (column 4, lines 46-59).

With respect to claim 3, although not specifically disclosed, it would have been obvious to one having ordinary skill in the art to include a switch means to stop operation of the fruit tester when the front shield is not closed against the opposed sides because this safety feature is well-known in the art as being applicable to a plurality of appliances in order to prevent injury due to contact with the device under operation.

Allowable Subject Matter

5. Claims 7-16 are considered allowable of the prior art because none of the prior art teaches or suggests classifying a soft tissue fruit into three concentric zones consisting of a first zone extending spacedly inward from the fruit periphery, a third zone including the fruit core, and a second zone bounded by the first and third zones, in the context of a motorized fruit tester.

Response to Arguments

6. Applicant's arguments with respect to claims 1, 3, 4, and 6-16 have been considered but are moot in view of the new ground(s) of rejection. The Examiner, however, does note the following arguments:

Applicant first argues the use of "HortPlus Quick Measure Penetrometer System" User Manual and Fact Sheet as prior art because "[t]here is not indication in the HortPlus reference matter provided by the Examiner of the data at which that material become public. The only data at all that appears on any of the material is that of "5/3/02" that appears opposite the Uniform Resource Locator (URL)". The examiner contends that while the description of the penetrometer system does not provide a date itself, the description does explain the system as comprising two parts: a motorised test stand, and a load cell and PC software. This PC software, which is necessary for the use of the penetrometer system, does provide a date of

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January 2000 (page 3, "HortPlus QuickMeasure Penetrometer System Version 2.0, January 2000").

Applicant also argues the use of Merck, Jr. to modify the invention of HortPlus because the hardness testing device disclosed by Merck, Jr. "uses forces that are thousands of times greater than those used in soft fruit testing". The Examiner maintains that the features of Merck that are used (i.e. basic device, motor train, and sensing structure) would be applicable in the invention of HortPlus as they could be used for lower force devices.

Applicant then argues the use of the inventions of McKay, Leuchtenmuller, and Peleg as not being relevant to the previously cited art. The Examiner recognizes that it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, the cited references are pertinent to the problems of keeping debris from entering the testing area, eliminating the need for stopping the process after each penetration to remove the penetrator, and improving portability.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 4,107,985 to Sommer teaches an "S-shaped" load cell with two equally spaced strain gauges.

U.S. Patent No. 5,591,902 to Castagner teaches a dynamic pyrotechnical penetrometer comprising a front shield/gate including a switch means to stop operation of the penetrometer when the front shield/gate is not closed against the opposed sides.

EP 0 439 405 A1 to Abbai et al. teaches a penetration type fruit tester wherein a fruit is placed on a dished support resting on a support platform of a stand, a motor controls the penetration of the fruit by a chuck, and a recording means records a plurality of force and penetration distance values that provide a characteristic profile for the fruit.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing

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date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey R. West whose telephone number is (703)308-1309. The examiner can normally be reached on Monday through Friday, 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (703)308-1677. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7382 for regular communications and (703)308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

jrw

February 24, 2003


MARC S. HOFF
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800